

EXPERIMENTAL TELEVISION CENTER LTD.

180 FRONT ST.

OWEGO, NEW YORK 13827

607-687-1423

12/76

JONES KEYS

PAGE 1

PARTS LIST

POWER SUPPLY AND MAIN FRAME

- 1 POWER TRANSFORMER, 28-30 VCT 2AMP
- 1 BRIDGE RECTIFIER, 50 PRV 2AMP
- 1 NATIONAL LM 340-K 12 REGULATOR CHIP
- 1 " LM 340-K 5 " "
- 1 " LM 320-K 5 " "
- 4 1000 μ F 25V ELECTROLYTIC CAPACITORS
- 3 100 μ F " " "
- 3 .1 μ F " DISC " "
- 3 .1 μ F 50V " " "
- 3 .1 μ F 200V CAPACITORS
- 3 SPDT MINI TOGGLE SWITCHES
- 2 .51 OHM 2WATT RESISTORS
- 1 LIGHT EMITTING DIODE + 1K OHM 1/4W RESISTOR
- 1 3WIRE LINE CORD
- 1 ENCLOSURE (PROTOTYPE IS 11"x7"x3")
- 7 VIDEO CHASSIS CONNECTORS (BNC OR UHF)
- 1 2 POLE, 3 POSITION WAFER SWITCH
- 5 1000 OHM LINEAR TAPER POTENTIOMETERS
- 6 KNOBS
- 15' RG-179/U COAXIAL CABLE
- 1 SHEET .1" LATTICE HOLE FIBRE BOARD STOCK

INTERNAL SYNC OPTION

- 13 2N3906 TRANSISTORS
- 12 PN 918 " "
- 15 1N270 DIODES
- 6 100 μ F 25V ELECTROLYTIC CAPACITORS
- 1 10 μ F " " "
- 2 1 μ F " " "
- 12 .1 μ F " DISC " "
- 1 .02 μ F " " " "
- 1 .004 μ F " " " "
- 2 .002 μ F " " " "
- 2 .001 μ F " " " "
- 5 1000 OHM BOURNS TRIMPOTS
- 1 10 OHM 1/4 WATT RESISTOR
- 7 1K " " "
- 13 1.5K " " "
- 11 5.1K " " "
- 4 10K " " "
- 12 20K " " "
- 1 30K " " "
- 3 51K " " "
- 1 200K " " "

EXTERNAL SYNC OPTION

- 3 PN918 TRANSISTORS
- 2 10 μ F 25V ELECTROLYTIC CAPACITORS
- 2 1K OHM 1/4 WATT RESISTORS
- 2 2K " " "
- 1 5.1K " " "
- 2 20K " " "
- 2 BNC FEMALE CHASSIS MOUNT CONNECTORS

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PARTS LIST - VIDEO

INTEGRATED CIRCUITS (NATIONAL SEMICONDUCTOR)

1 LM710CN
4 MC1445L
1 DM7400N
1 DM7486N

TRANSISTORS

4 2N3906
19 PN918 (2N918)

DIODES

5 1N270

CAPACITORS

15 100 μ F 25 V ELECTROLYTIC
14 10 μ F " "
29 .1 μ F " DISC
1 220 pF " "

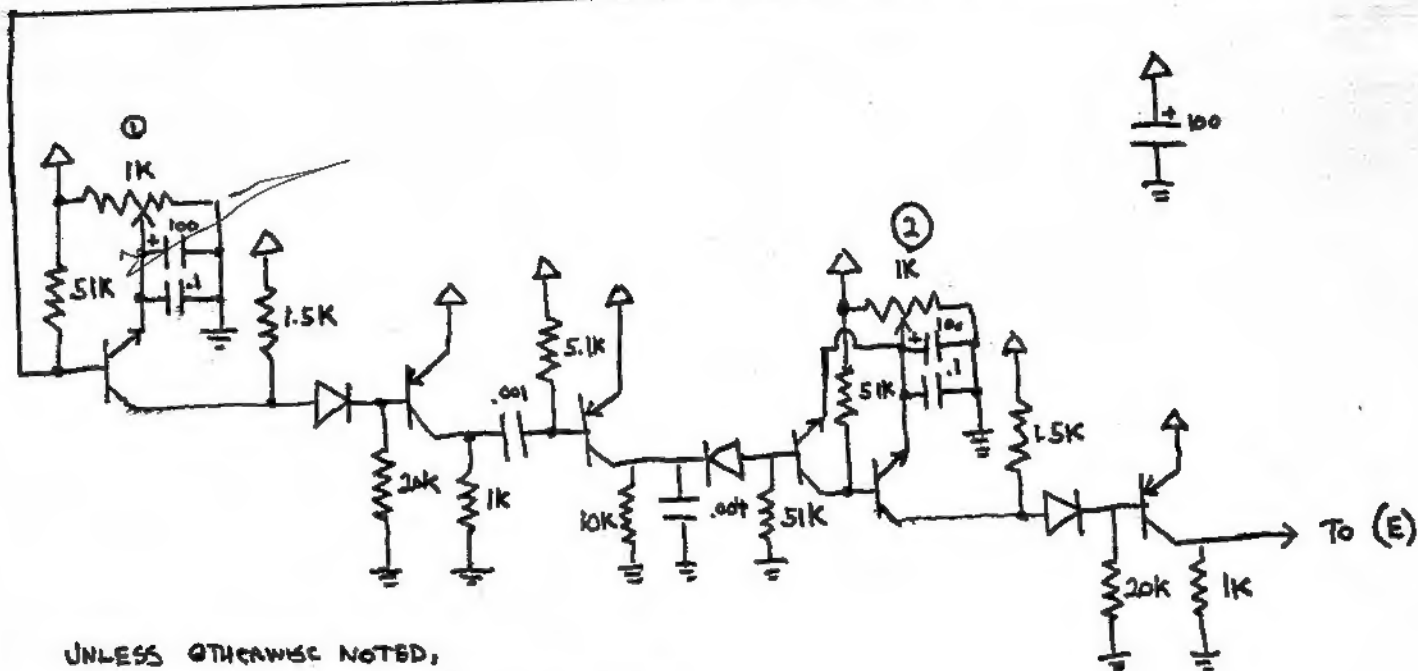
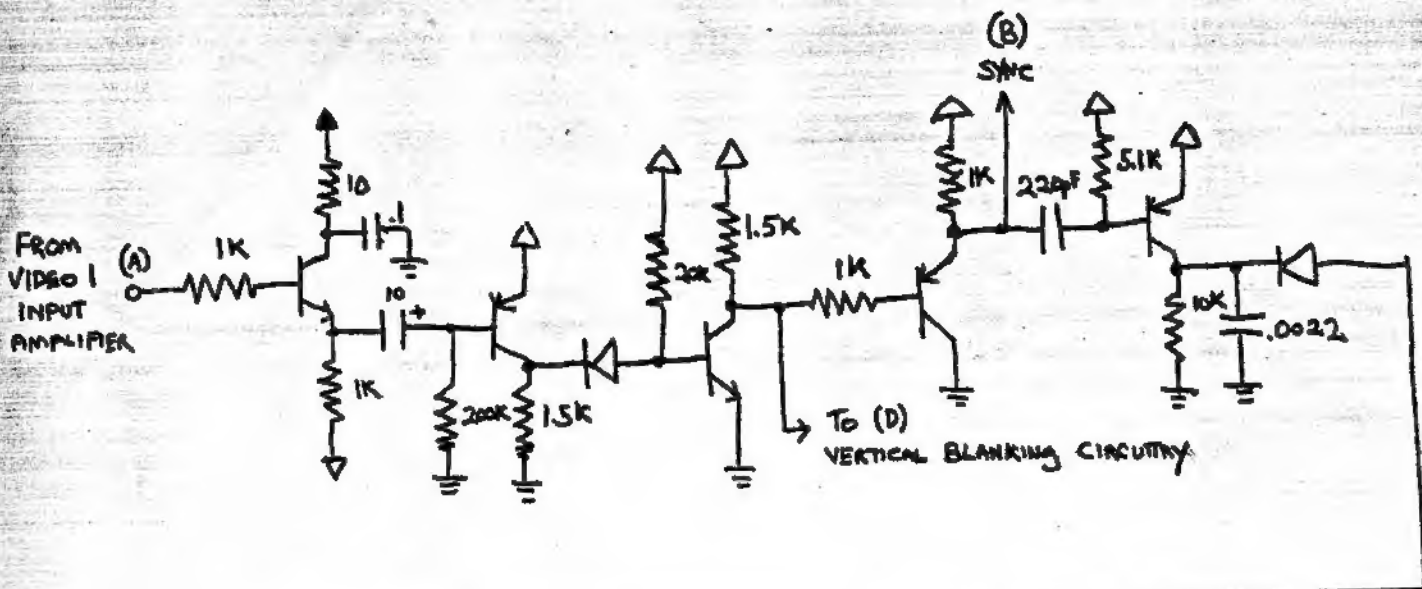
RESISTORS

3 1k OHM BOURNS TRIMPOTS
2 2.7 " 1/4 WATT RESISTORS
25 10 " " "
1 75 " " "
10 100 " " "
1 200 " " "
1 510 " " "
25 1K " " "
5 1.5K " " "
5 2K " " "
10 3K " " "
6 5.1K " " "
4 7.5K " " "
2 8.2K " " "
6 10K " " "
2 30K " " "
1 100K " " "

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SYNC CIRCUITRY PART 1



UNLESS OTHERWISE NOTED,

CAPACITANCES ARE IN MICROFARADS, WVDC

RESISTANCES ARE IN OHMS, 1/4 WATT

PNP'S ARE 2N3906

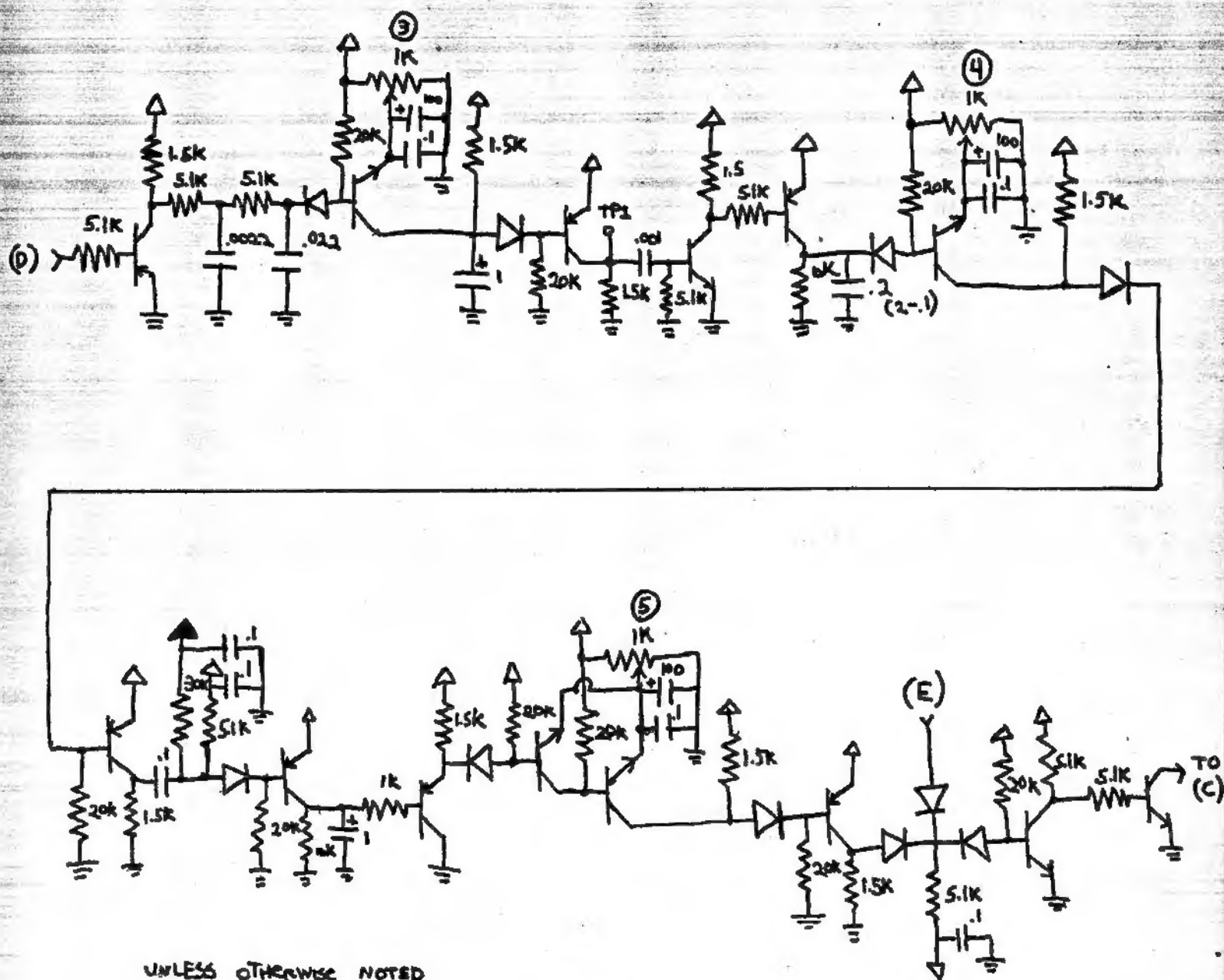
NPN'S ARE PN912

DIODES ARE IN 270

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JONES KEYER PAGE 4

SYNC CIRCUITRY PART 2 (VERTICAL BLANKING)



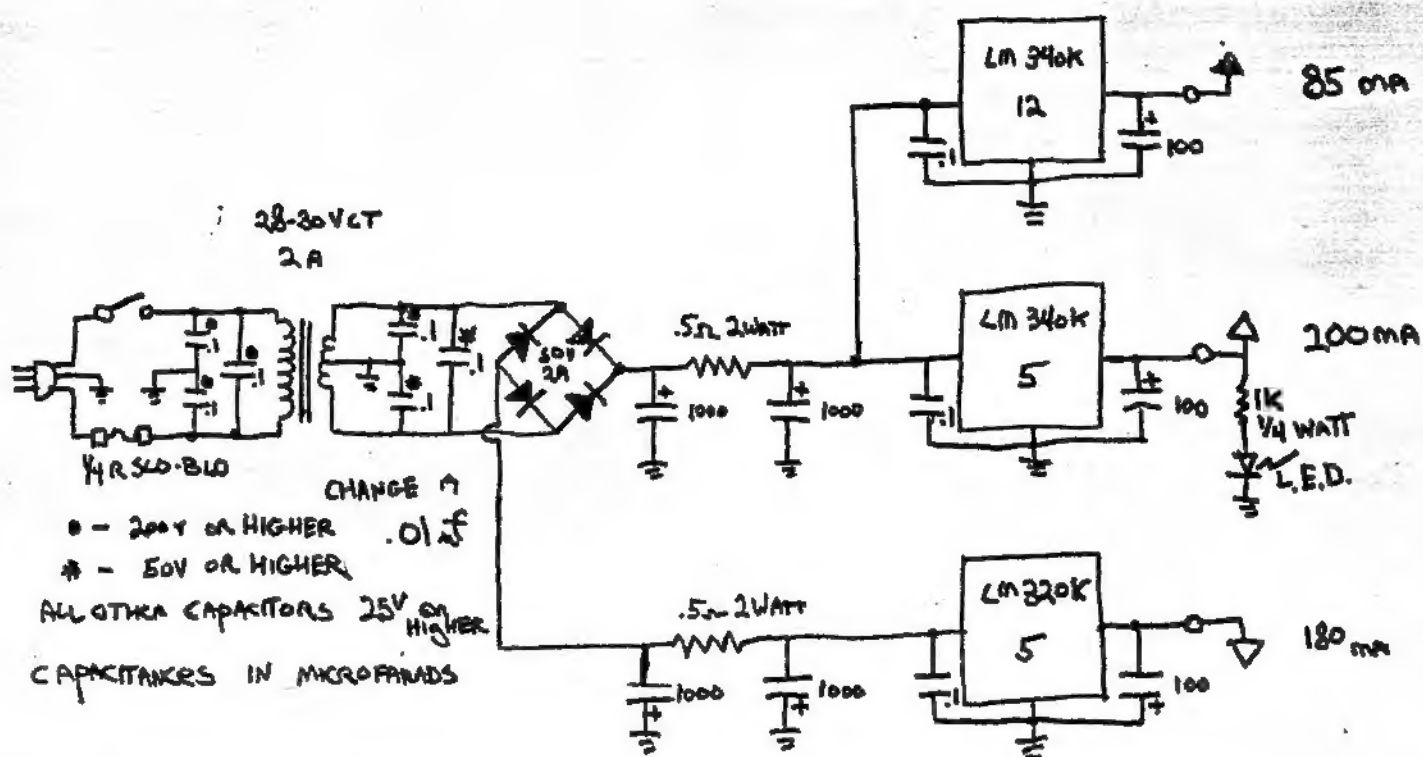
DIODES ARE IN270

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PAGE 5

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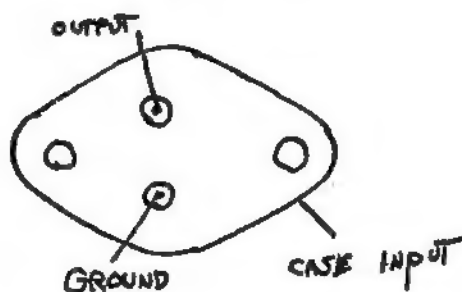
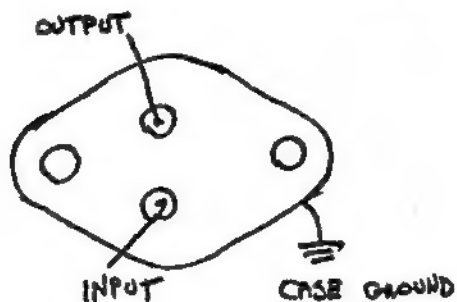
POWER SUPPLY SCHEMATIC



LM340K

BOTTOM VIEWS

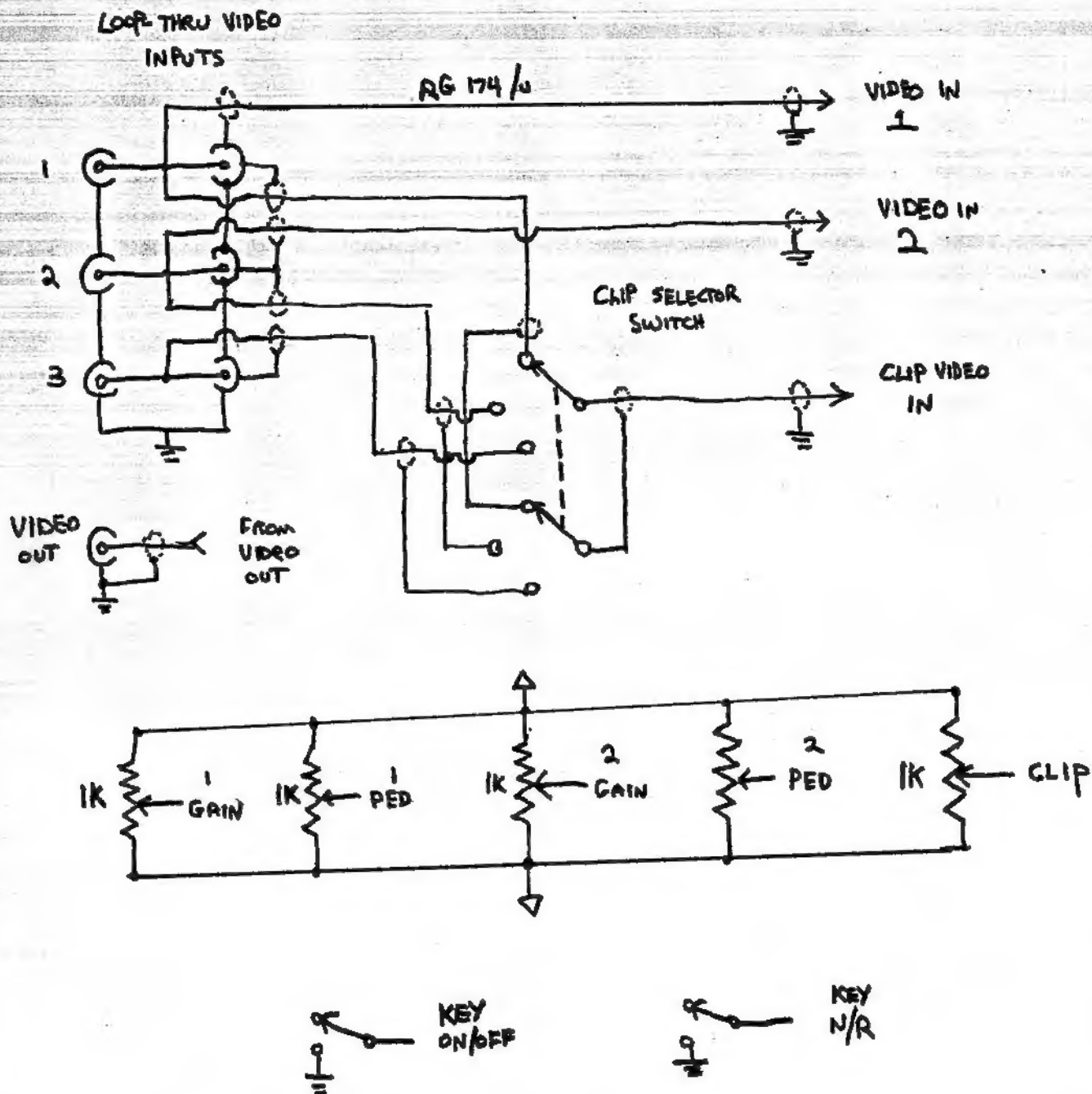
LN320K



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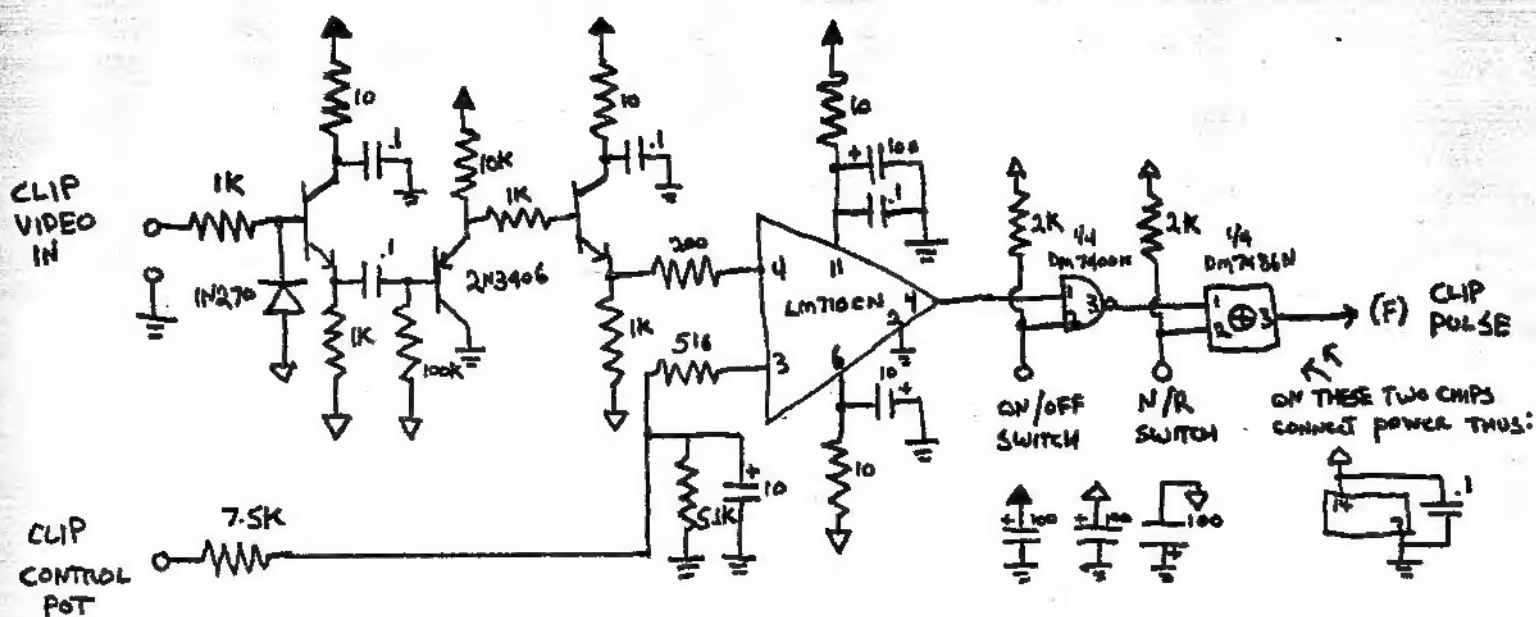
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MAIN FRAME



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 CLIP CIRCUIT



CAPACITANCES IN MICROFARADS, 25V
 RESISTANCES IN OHMS, 1/4 WATT
 NPN'S ARE PN918

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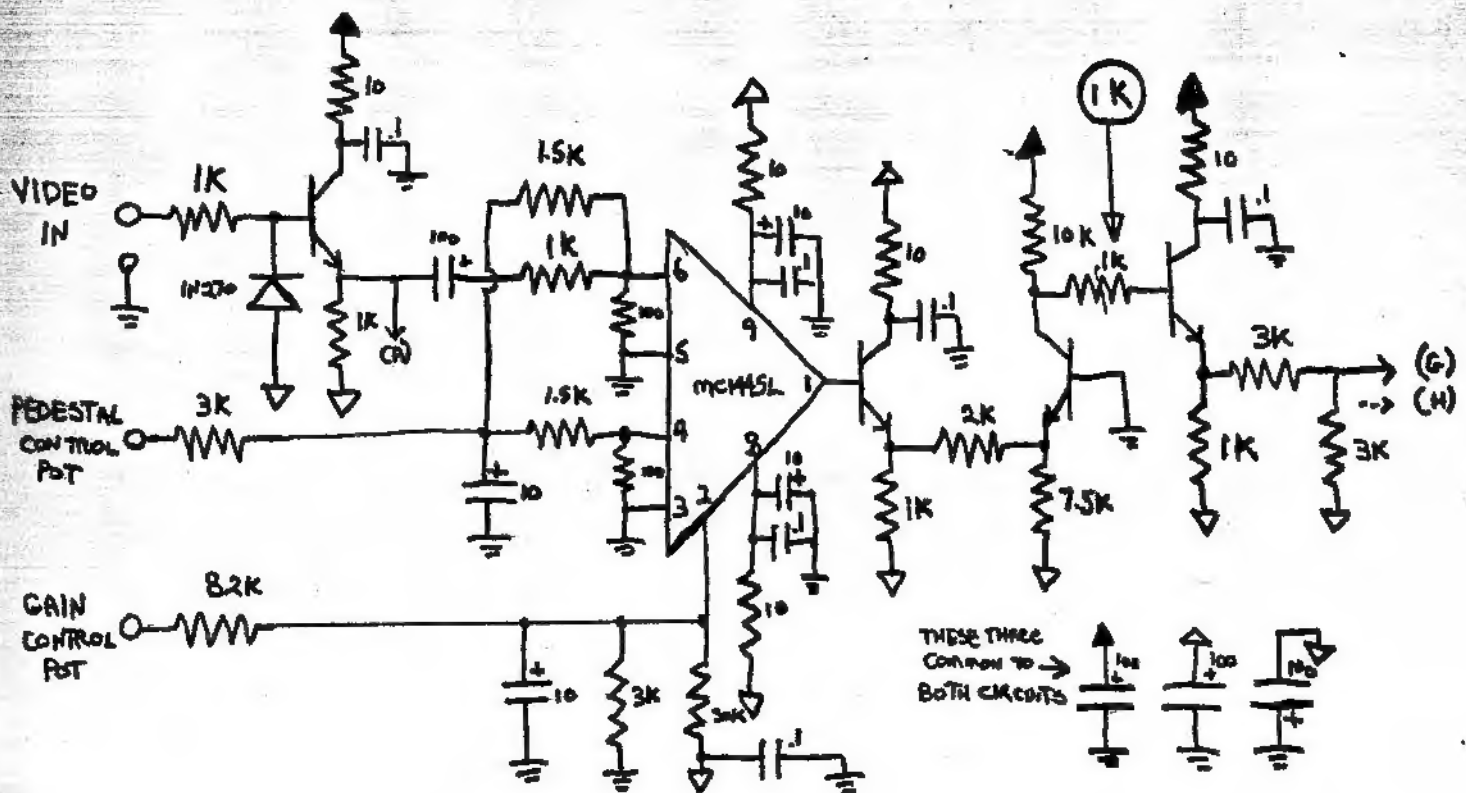
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VIDEO INPUT AMPLIFIER CIRCUIT



THIS IS ONE OF TWO IDENTICAL CIRCUITS FOR VIDEO 1 AND VIDEO 2.

THE SYNC CIRCUIT CONNECTION (H) COMES OFF ONLY THE FIRST CIRCUIT, VIDEO 1.

CAPACITANCES ARE MICROFARADS, 25V

RESISTANCES ARE OHMS, 1/4 WATT

TRANSISTORS ARE PN418


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SYNC SUPPLEMENT

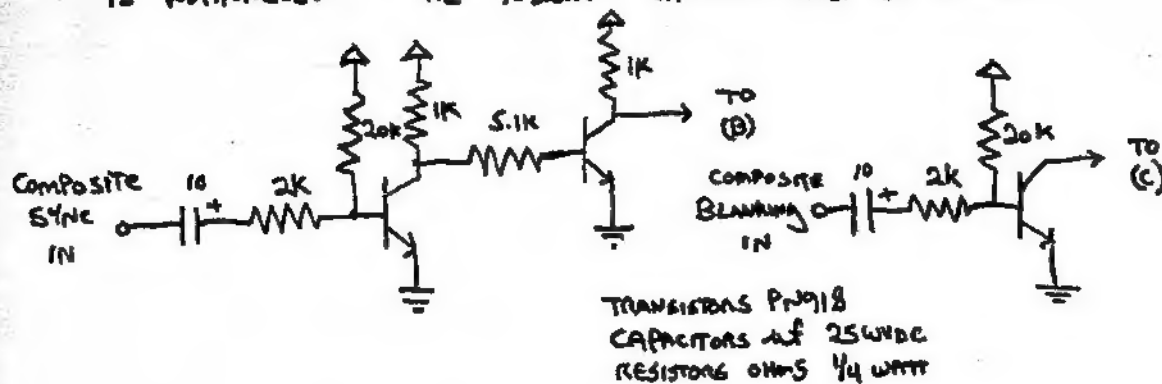
TRIMPOT ADJUSTMENTS FOR SYNC:

OBSERVE SIMULTANEOUSLY ON DUAL CHANNEL SCOPE AT (B) SYNC, AND (C) BLANKING, FOR ALL MEASUREMENTS EXCEPT STEP ③. FOR ③, OBSERVE WAVEFORM AT TP1.

POT

- ① SET BACK EDGE OF HORIZONTAL BLANKING 6 μ S AFTER END OF SYNC.
- ② SET HORIZONTAL BLANKING TO BEGIN 2 μ S BEFORE SYNC BEGINS.
- ③ SET WAVEFORM AT ABOUT 2MS WIDTH. 
- ④ SET VERTICAL BLANKING TO END 18 LINES AFTER THE BEGINNING OF VERTICAL SYNC.
- ⑤ SET VERTICAL BLANKING TO START 3 LINES BEFORE VERTICAL SYNC BEGINS.

THE ENTIRE SYNC CIRCUITRY SECTION MAY BE ELIMINATED IF EXTERNAL SYNC IS AVAILABLE. THE FOLLOWING CIRCUITS MUST BE ADDED.



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JONES KEYSER PAGE 11

NOTES

CONSTRUCTION

PARTS ACCUMULATION:

1/4 WATT RESISTORS ARE NECESSARY TO SAVE SPACE.

TRY TO FIND MINIATURE JAPANESE ELECTROLYTIC CAPACITORS.

CAPACITORS WITH HIGHER VOLTAGE RATINGS THAN IN THE SPECIFICATIONS ARE O.K. IF NOT TOO LARGE.

IF YOU CANNOT LOCATE MINIATURE PARTS, YOU MAY HAVE TO USE A LARGER BOARD AND ENCLOSURE.

ASSEMBLY NOTES:

USE #20 OR #22 TEFLON INSULATED STRAPPED WIRE FOR THE CHASSIS AND POWER SUPPLY.

USE #24 SOLID TEFLON INSULATED WIRE FOR POINT TO POINT WIRING ON THE BOARD.

GROUND BOTH ENDS OF EVERY COAXIAL CABLE. NOTE THAT THE GROUND IS ALSO SWITCHED AT THE CLIP SELECTOR SWITCH.

THE PROTOTYPE IS CONSTRUCTED ON .1" HBR LATTICE FIBREGLASS BOARD. THE COMPONENTS MOUNT ON ONE SIDE, LEADS PROTRUDING THROUGH TO THE OPPOSITE SIDE WHERE THEY ARE DIRECTLY SOLDERED TO OTHER LEADS. WIRES LEADING OFF THE BOARD FASTEN TO THE COMPONENT SIDE. THE INSULATION BUTTS FLUSH WITH THE BOARD SURFACE, WIRE GOING THROUGH AND BEING SOLDERED CLOSE TO EACH OTHER. PLACEMENT OF PARTS REDUCES NOISE AND SIGNAL LOSSES. RESISTORS ARE USUALLY INSERTED STANDING ON END TO SAVE SPACE. IF DESIRED, SOCKETS MAY BE USED FOR THE INTEGRATED CIRCUITS. BEGIN BOARD CONSTRUCTION BY RUNNING A GROUND Buss OF #18 BussWIRE ALL AROUND THE EDGE OF THE BOARD AND DOWN THE CENTER. ALWAYS TIE GROUNDS FROM THE SAME CIRCUIT CLOSE TO EACH OTHER ON THE Buss. NOTE THE THREE SETS OF 100M Ω POWER Buss FILTERS. THESE SHOULD BE PLACED CLOSE TO THEIR ASSOCIATED CIRCUITRY.

BOTH BOARDS ARE MOUNTED AT THEIR CORNERS ON STANDOFFS. THE BOTTOM WIRING MUST CLEAR THE CHASSIS. WE HAVE COVERED THE CHASSIS WITH CLOTH TAPE TO PREVENT SHORTS. ALL WIRES TO THE MAIN BOARD SHOULD BE TIED IN A CABLE THAT COMES OFF AT ONE POINT. A BIT OF SLACK IN THIS CABLE ALLOWS THE BOARD TO BE LIFTED OUT FOR TESTING DURING OPERATION.

OUTPUT AMPLIFIER ADJUSTMENT

POT #6, 7 + 8 SHOULD BE ADJUSTED WHILE OBSERVING THE OUTPUT OF THE MACHINE ON A SCOPE. POT #6 SETS VIDEO LEVEL, POT #7 SETS SYNC LEVEL, POT #8 BALANCES THE TWO LEVELS. SET VIDEO AT .7V P-P, SYNC AT .3V P-P, FOR A COMPOSITE VIDEO SIGNAL OF 1 VOLT P-P.

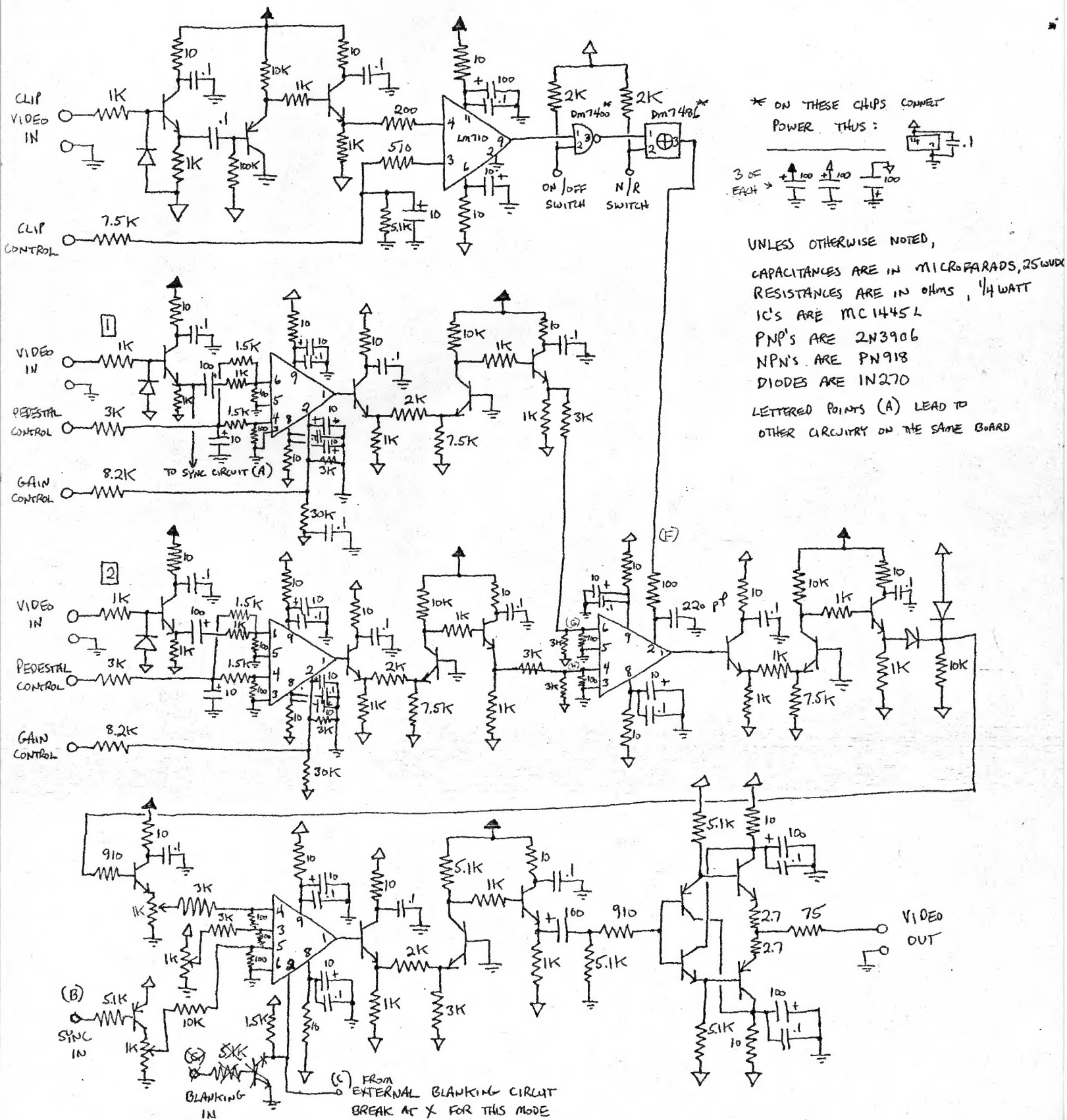
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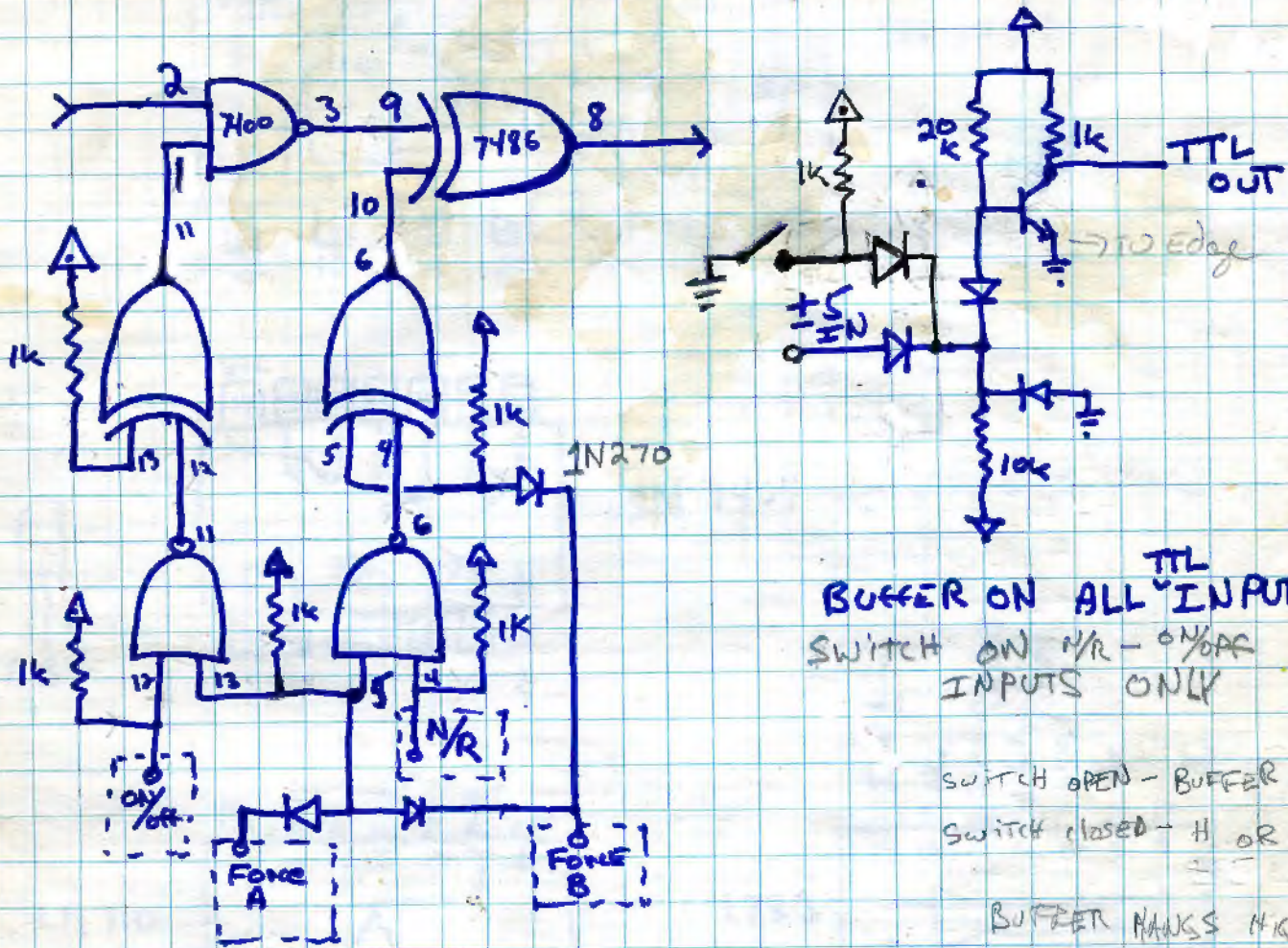
JONES KEYER

VIDEO CIRCUITRY

(FOR ETC FILES - DO NOT COPY)



LOGIC MODIFIKATION ON KEFER



BUFFER ON ALL ^{TTL} INPUTS
SWITCH ON N/R - ON/OFF
INPUTS ONLY

Switch open - BUFFER out L_0
Switch closed - H OR $\pm \sin$

BUFFER RINGS HIGH
UNTIL H COMES TO
INPUT THEN GOES L